BULLETIN

OF THE

INTERNATIONAL RAILWAY CONGRESS

ASSOCIATION

(ENGLISH EDITION)

[385. (05]

Vol. V. — 1923.

PUBLISHER : M. WEISSENBRUCH Co., Ltd., Printer to the King,
49, rue du Poinçon, Brussels.

SUBSCRIPTIONS MAY BE SENT ALSO TO P. S. KING AND SON, Ltd.
PARLIAMENTARY AND GENERAL BOOKSELLERS
2 and 4, Great Smith Street, Westminster, S. W., London.

The Permanent Commission of the Association is not responsible for the opinions expressed in the articles published in the Bulletin.

All original articles and papers published in the BULLETIN are copyright, except with the consent of the authors and the Committee.

NOTICE TO READERS

LIST OF ABBREVIATIONS OF MEASURES, ETC., USED IN THE *BULLETIN*

Kilometre	km.	Hour	h.
Metre	m.	Minute	m.
Centimetre	cm.	Second	s.
Square kilometre	km^2.	Kilogrammetre	Kg.-M.
Square metre	m^2.	Kilowatt	kw.
Square centimetre	cm^2.	Kilowatt-hour	kw.-h.
Hectare	ha.	Watt	w.
Are	a.	Horse power	H. P.
Centiare	ca.	Per cent	%
Cubic metre	m^3.	Per thousand	‰
Cubic centimetre	cm^3.	Tonne-kilometre	tkm.
Stere	st.	Passenger-kilometre	p.-km.
Hectolitre	hl.	Train-kilometre	tr.-km.
Litre	l.	Franc	fr.
Centilitre	cl.	Centime	c.
Degree	°	Lire	L.
Minute	′	Centesimo	c.
Second	″	Pound sterling	£.
Tonne (French)	t.	Shilling	sh.
Ton (English)	ton.	Penny	d.
Hundredweight	cwt.	Dollar	$.
Kilogramme	kgr.	Cent	ct.
Gramme	gr.	Mark	mk.
Centigramme	cgr.	Pfennig	pf.

INT
v.5 cop.2

625538

NOTICE

The *Bulletin of the International Railway Congress Association* is published in twelve numbers every year, forming a volume of 800 pages at least.

The volumes for the years 1896 to 1914 and for 1919 to 1922 contained respectively 1 370, 1 824, 1 634, 1 695, 3 988, 2 734, 1 129, 1 353, 2 066, 2 626, 2 027, 1 460, 1 558, 2 015, 4 010, 1 678, 1 471, 1 242, 1 112, 355, 968, 2 344 and 1 582 pages illustrated with numerous plates and diagrams.

Previous volumes of the *Bulletin of the International Railway Congress Association* published in French only, containing 1 574, 1 196, 2 194, 1 576, 749, 4 114, 1 124, 1,118, 3 812 and 1 632 pages, illustrated with numerous plates and diagrams, for the years 1887 to 1896 respectively, may also be obtained from the publisher.

CONTENTS

OF THE

5th YEAR OF THE ENGLISH EDITION.

	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
No. 1. — January 1923.			
I. **The general transport situation** in 1921. — Introduction by Mr. TAJANI	5	...	347 .7
II. Report on the opening of the Pau-Lourdes line by **electric traction**, by E. UYTBORCK	43	...	621 .33 (.44)
III. **Railway location**, by S. BLENCOWE	45	Figs. 1 to 4, pp. 50 to 67.	625 .111
IV. MISCELLANEOUS INFORMATION :			
1. **The world's railways**	69	...	313 .385 (.3)
2. Relative merits of wooden, steel and concrete **tanks**, by F. A. ESKRIDGE	71	...	725 .33
3. **Cleaning track** with a power-driven sweeper	72	Fig. 1, p. 73.	625 .172 (.73)
4. **Recruiting and training of railway staff**	74	...	385 .57 (.42) & 385 .586 (.42)
V. OFFICIAL INFORMATION issued by the Permanent Commission of the International Railway Congress Association :			
Appointment of Mr. J. Verdeyen as Honorary corresponding member of the College of the National Society of Italian Railway Engineers	78	...	385. 06.119
VI. OBITUARY :			
N. A. **Bélélubsky**	79	...	385. (09.2
VII. MONTHLY BIBLIOGRAPHY OF RAILWAYS :			
I. Books	1	...	016. 385. (02
II. Periodicals	3	...	016. 385. (05
No. 2. — February 1923.			
Ninth session, Rome : April 1922.			
GENERAL PROCEEDINGS IN SECTIONS AND IN GENERAL MEETINGS.			
(1st section : Way and works) :	81	...	385. (06.112
Inaugural meeting of the 1st section	81	...	...
Opening meeting of the 1st section	83	...	...

No. 2. — February 1923 (Continued).	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
Question I : **Construction of the road bed and of the track** . . .	84	...	625 .14 (01
Appendix 1 : Supplement to report No. 5 (Great Britain), by E. F. C. Trench	106	...	625 .14 (01
— 2 : Note on the question of the **construction of the road bed and of the track,** by L. Marczeni .	113	Figs. 1 to 14, pp. 114 to 118.	625 .14 (01
— 3 : Notes on **testing ballast** by professor K. Špaček's method, by H. Deyl	124	Fig. 1, p. 125.	625 .14 (01 & 625 .141
Question II : **Maintenance and supervision of the track**	128	...	625 .17
Appendix 1 : Note on the organisation of the **maintenance of permanent way** on the local line from Blois to Villefranche-sur-Cher, by Mr. Albagnac .	147	...	625 .17
— 2 : Note on the **maintenance and supervision of the track,** by H. Deyl	149	...	625 .17
Question III : **Special steels**.	152	...	625 .143.2, 625 .15 & 669 .1
— IV : **Reinforced concrete**	170	...	624 .63 & 721 .9
Appendix : Note on the use of **ordinary concrete** and **reinforced concrete** in the construction of the Czecho-Slovakian Railways, by L. Kovařík .	201	...	624 .63 & 721 .9
No. 3. — March 1923.			
I. **British locomotives in 1922**. Designs and work, by J. F. Gairns	205	Figs. 1 to 6, pp. 209 and 211.	621 .132.1 (.42)
II. **Automatic mechanical couplers** for the Indian (broad gauge) railways, by A. M. Bell	224	Figs. 1 to 3, pp. 225 and 227.	625 .216 (.54)
III. **The Ljungström turbine locomotive** for the Swedish State Railways	229	Figs. 1 to 13, pp. 230 to 239.	621 .132.8 (.485)
IV. Instructions relating to **reinforced concrete structures**. . .	242	...	69. (01
V. Preservative treatment of **ties and timber**, by F. C. Shepherd.	253	Figs. 1 and 2, pp. 256 to 259.	625 .142.2
VI. **Modern signals** expedite heavy suburban traffic.	264	Figs. 1 to 4, pp. 265 and 267.	656 .253 (.73)
VII. How the Union Pacific keeps its **freight cars moving** . . .	269	Figs. 1 to 3, pp. 269 to 273.	656 .223.2 (.73)
VIII. Miscellaneous information :			
1. Many **gages** are found throughout the world . . .	277	...	625 .112 (.3)
2. **Protecting steel bridges** from locomotive blast. . .	280	Figs. 1 to 4, pp. 281 and 282.	691
3. **Electric locomotive** for passenger trains : North Eastern Railway	283	Fig. 5, p. 284.	621 .335 (.42)
4. **Flange oilers** reduce rail and tire wear	285	Figs. 6 to 9, p. 287.	621 .135.2

No. 3. — March 1923 (Continued.)	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
X. Official information issued by the Permanent Commission of the International Railway Congress Association :			
Award of the triennial « **Arthur Dubois** » **Prize.** (1st award : 1920-1922.)	289	...	385. (06.111
X. Monthly bibliography of railways :			
I. Books	13	..	016 .385. (02
II. Periodicals	16	..	016 .385. (05
No. 4. — April 1923.			
Ninth session, Rome : April 1922.			
General proceedings in sections and in general meetings.			
(2nd section : Locomotives and rolling stock) :	291	...	385. (06.112
Inaugural meeting of the 2nd section	291	...	...
uestion V : **Economic production and use of steam on locomotives** .	292	...	621 .133. (01, 621 .134.3 & 621 .134.4
Appendix 1 : The development of the **steam locomotive** in North America, by G. L. Bourne . . .	320	...	621 .13 (.73)
— 2 : **Apparatus for bringing coal forward** on locomotive tenders, Halla-Haken system (Patented), by P. Koller	323	Figs. 1 to 3, p. 324.	621 .138.2
— 3 : Note on the **hot water washing out plant** at the locomotive shed at St. Lorenzo, Rome, by R. Cassinis	326	...	621 .133.7 & 621 .138.3
uestion VI : **Bogies (trucks), axles and springs of locomotives** . .	329	...	621 .135.2, 621 .135.3 & 621 .135.4
— VII : **Passenger carriages**	344	...	625 .23 (01
— VIII : **Electric traction**	366	...	621 .33
otion relating to the drafting of the list of questions of the next session : **Utility of studying the question of the use of liquid fuel in locomotives**	415	...	621 .133.1
No. 5. — May 1923.			
I. **New system of signalling** on the Belgian State Railways, by J. Verdeyen.	419	Figs. 1 to 29, pp. 420 to 441	656 .253 (.493)
II. Opening of the Pau-Lourdes line by **electric traction**, by E. Uytborck	442	Figs. 1 to 3, pp. 442 and 443.	621 .33 (.44)
III. The **renewal of bridges**, by B. P. Fletcher.	444	Figs. 1 to 15, pp. 447 to 449.	625 .13

No. 5. — May 1923. (Continued.)	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification
IV. Some facts about the construction of the **London Tube Railways**, by Harley H. Dalrymple-Hay	453	Figs. 1 to 5, pp. 457 to 467.	625 .4 (.42) & 625 .13 (.42)
V. **Malleable cast iron**, by E. Touceda	467	Figs. 1 to 7, pp. 469 to 475.	669 .1
VI. The « neutral » steel process in **rail manufacture**, by Cecil J. Allen	476	Fig. 1, p. 482.	625 .143.2
VII. The mechanical **drafting of locomotives**, by Frans H. C. Coppus	482	Figs. 1 to 3, p. 487.	621 .133.5
VIII. **International Union of Railways**, by J. Verdeyen	489	...	385. (06
IX. Miscellaneous information :			
1. **80 tonnes travelling cranes** at the Bellinzona locomotive repair shops of the Swiss Federal Railways.	497	Figs. 1 to 3, p. 498.	621 .87 (.494)
2. **Locomotive failures**	499	...	621 .131
3. **Rates of pay of railway employees** in Great Britain	501	...	385 .52 (.42)
X. Official information issued by the Permanent Commission of the International Railway Congress Association :			
Meeting of the Executive Committee on 17 February 1923.	507	...	385. (06.111
Questions for discussion at the London session (1925) **with the names of the reporters**	508	...	...
XI. Monthly bibliography of railways :			
I. Books	27	...	016. 385. (02
II. Periodicals	31	...	016. 385. (05
No. 6. — June 1923.			
Ninth session, Rome : April 1922.			
General proceedings in sections and in general meetings.			
(3rd section : Operation) :	515	...	385. (06.112
Inaugural meeting of the 3rd section	515	...	...
Question IX : **Terminal stations for passengers**	516	...	656 .211
— X : **Goods (freight) stations**	542	...	656 .212 & 725 .32
— XI : **Slow-freight traffic**	558	...	656 .222.6
— XII : **Locomotive cab signals**	590	...	656 .253 & 656 .259
Appendix : Corrigenda to report No. 3 on question XII, by F. Villa	617	...	656 .253 & 656 .259

No. 7. — July 1923.	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
I. Mechanical manipulation of the **three position semaphore arms** on the Belgian State Railways, by R. MINET.	619	Figs. 1 to 83, pp. 620 to 694.	656 .253 (.493)
II. Creosote shortage threatens **wood preservation**, by C. M. TAYLOR	696	...	625 .142.2 & 691
III. **Route signalling** at Winchester, Great Western Railway . .	700	Figs. 1 to 6, pp. 701 and 704.	656 .257 (.42)
IV. MISCELLANEOUS INFORMATION :			
1. **100-ton Gondola car** with four-wheel trucks . . .	707	Figs. 1 to 4, pp. 708 and 710.	625 .242 (.73)
2. **Arrangement of stations served with double lines** on the Northern Railway of France	711	Figs. 5 to 8, p. 712.	656 .211 (.44)
V. OBITUARY :			
Stuyvesant **Fish**	715	One portrait.	385. (09.2
VI. NEW BOOKS AND PUBLICATIONS :			
Railway permanent way, by W. HEPWORTH and J. T. LEE.	717	...	625 .14 (02 & 385. (04
Manuel du mécanicien et du chauffeur de locomotive (Text-book for locomotive drivers and firemen), by E. BRILLIÉ .	717	...	621 .137.1 (02 & 385. (04
Les chemins de fer à voie d'un mètre (Metre gauge railways), by Mustapha Ibrahim Bey de COURTEN	718	...	625 .611 & 385. (04
VII. MONTHLY BIBLIOGRAPHY OF RAILWAYS :			
I. Books.	43	...	016 .385. (02
II. Periodicals	45	...	016 .385. (05
No. 8-9. — August-September 1923.			
Ninth session, Rome : April 1922.			
GENERAL PROCEEDINGS IN SECTIONS AND IN GENERAL MEETINGS.			
(4th section : General) :	719	...	385. (06.112
Inaugural meeting of the 4th section.	719	...	...
Question XIII : **Net cost. Rates**	720	...	656 .23
— XIV : **Customs examination**	732	...	656 .224
— XV : **Interchange of rolling stock**	747	...	656 .223.2
— XVI : **Workmen's dwellings**	771	...	385 .517.7
(5th section : Light railways) :	785	...	385. (06.112
Inaugural meeting of the 5th section.	785	...	...
Question XVII : **Carriages and wagons for light railways** . . .	786	...	625 .617

No. 8-9. — August-September 1923. (Continued.)	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
Question XVIII : **Operation of light railways. Working rules and regulations**	802	...	656 .272
— XIX : **Special methods of traction on light railways**	822	...	625 .616
— XX : **Safety appliances on light railways**	838	...	656 .27
Special section : **Compilation of rules and regulations of the Association**	855	...	385. (06.111
N° 10. — October 1923.			
I. Tentative specifications for **concrete and reinforced concrete.** (1st part.)	875	...	69. (01
II. Description of « **slump test** » as applied to concrete and reinforced concrete	915	...	69. (01
III. New German rules for **railway bridge calculations**	916	Fig. 1, p. 917.	624. (01 (.43)
IV. **Mechanical track construction and maintenance**, by N. M. Clougher	923	Figs. 1 to 14, pp. 926 to 940.	625 .144.4
V. Some fundamentals of **train control**, by F. L. Dodgson	941	Figs. 1 to 10, pp. 944 to 952.	656 .253. (01
VI. **The railway position** in Great Britain	953	...	385. (09 (.42)
VII. Miscellaneous information :			
1. An **improved type of sole plate** for attaching flat bottomed rails to sleepers and a **new method of attaching rails** to ferro-concrete sleepers	958	Figs. 1 to 5, p. 960.	625 .143
2. **Electrically operated 25 t. Goliath crane** at the goods station at Zurich, from W. Druey	961	Fig. 1, p. 962.	621 .87 (.494)
3. **Electrification of the Virginian Railway**	963	...	621 .33 (.73)
4. New type of transmission by **coupling rods for electric locomotives**	963	Figs. 1 and 2, p. 964.	621 .335
VIII. Official information issued by the Permanent Commission of the International Railway Congress Association :			
Meeting of the Permanent Commission on the 28 July 1923	966	...	385. (06.111
Questions for discussion at the London Session (1925) with the names of the reporters	968	...	...
IX. New books and publications :			
Telephone erection and maintenance, by H. G. White	974	...	621 .395. (02 & 385. (04
Repairing of locomotives, by E. L. Ahrons	974	...	621 .138.5 (02 & 385. (04
The problem of the railway sleeper, by A. J. Beaton	975	...	625 .142.1 (02 & 385. (04
Locomotive catechism, by R. Grimshaw	976	...	621 .13 (02 & 385. (04
Locomotive engineers' pocket book and diary, 1923	977	...	621 .13 (02 & 385. (04
Lubrication of locomotives, by E. L. Ahrons	977	...	621 .134.5 (02 & 385. (04
X. Monthly bibliography of railways :			
I. Books	51	...	016 .385. (02
II. Periodicals	54	...	016 .385. (05

No. 11. — November 1923.

	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
I. **Proceedings of the XVIIIth international Congress of tramways,** light railways and public motor vehicle services, by Mr. De Croës.	979	...	625 .61 (06
II. A method of introducing **transition curves,** by Reginald Braham Robinson.	993	Figs. 1 and 2, p. 994.	625 .113
III. Design and performance of **locomotive feed water purifiers** on Hungarian State Railways, from Desider Ledacs Kiss	997	Figs. 1 to 3, pp. 999 to 1001.	621 .133.7
IV. Gas type **feed water heaters** on Austrian railways, by John Rihosek	1002	Figs. 1 and 2, pp. 1004 and 1005.	621 .133.7 (.436)
V. Principles of **terminal station design,** by A. Fellheimer	1006	...	656. 211.4
VI. **Operating trains** against current **reduces delays,** by K. E. Kellenberger	1012	Figs. 1 to 3, pp. 1014 and 1016.	656 .222.4 (.73)
VII. **Main line control,** North Eastern Area, London & North Eastern Railway	1020	Figs. 1 to 4, pp. 1021 to 1026.	656 .254 (.42)
VIII. **New day colour-light signalling** on the London & North Eastern Railway	1030	Figs. 1 to 6, pp. 1032 and 1034.	656 .253 (.42)
IX. **The Italian State Railways** during the financial years 1920-1921 and 1921-1922	1037	...	385 .113 (.45)
X. Miscellaneous information :			
1. « **Conductor-guard** » **trains** on the London & North Eastern Railway	1044	Fig. 1, p. 1044.	656 .224 (.42)
2. A notable **interlocking replacement.**	1045	...	656 .257 (.42)
3. **The recovery of the Roumanian railways**	1046	...	385. (09 (.498)
XI. New books and publications :			
Railways for all, by J. F. Gairns.	1048	...	385. (09.1 & 385. (04
Railway technical vocabulary (Vocabulaire technique des chemins de fer), by L. Serraillier	1049	...	385. (03 & 385. (04
Special Indian Railway Progress Number. (*Railway Gazette* and *Railway News*)	1049	...	385. (09.1 & 385 (04
The engineers' pocket technical dictionary, French-English, by M. Lvoff	1050	...	62. (03 & 385. (04
Railway signal and permanent way engineers' pocket book, 2nd edition.	1050	...	656 .25 (02 & 385. (04
XII. Monthly bibliography of railways :			
I. Books.	63	...	016 .385. (02
II. Periodicals	64	...	016 .385. (05

No. 12. — December 1923.

	PAGES.	NUMBERS of plates and figures.	NUMBERS of the decimal classification.
I. **Fish plates** on the Federated Malay States Railways, by the Administration of these railways	1053	Figs. 1 to 34, pp. 1056 to 1072.	625 .143.4 (.54)
II. Proposed new American rules for the **design of metal bridges**.	1074	Figs. 1 to 3, pp. 1074 and 1075.	624. (01 (.73)
III. Graphical determination of **running of trains**, by C. Fiala.	1081	Figs. 1 to 5, pp. 1082 to 1085.	656 .222.4
IV. Some examples of the provision for **ventilation of tunnels and subways**	1087	Figs. 1 to 9, pp. 1090 to 1096.	625 .13
V. **Development of the locomotive**, by Sir Henry Fowler	1097	...	621 .131
VI. Miscellaneous information :			
1. Standardisation of **rail testing methods**.	1101	...	625 .143.2 & 62. (01
2. The first application of the « **booster** » in England.	1102	...	621 .132.3 (.42) & 621 134.1 (.42)
3. **Bonuses given for economy** in fuel and lubricants on the Czecho-Slovakian railways.	1103	...	385 .524
4. Financial prospects of **electrification** of railways in Great Britain	1105	...	621 .33 (.42)
5. Results of an **automatic train control** test on the Pennsylvania Railroad	1108	..	656 .253 (.73)
VII. New books and publications :			
Trattato moderno d materiale mobile ed esercizio delle ferrovie (Treatise on modern rolling stock and the working of railways). Part II, by F. Tajani.	1111	...	385. (02 & 385. (04
Railroad construction, by W. L. Webb	1112	...	625 .1 (02 & 385. (04
Leçons sur les chemins de fer (degré moyen) [**Lectures on railways** (intermediate stage)], by L. Bordas	1113	...	385. (02 & 385. (04
Histoire du chemin de fer du Simplon (The history of the Simplon Railway), by J. Stockmar	1114	...	625 .3 :09.3 (.494) & 385. (04
VIII. Monthly bibliography of railways :			
I. Books	69	...	016 .385. (02
II. Periodicals	70	...	016 .385. (05
IX. Contents of the 5th year of the English edition	I to VIII	...	...
X. Analytical table of articles according to the decimal classification	1 to 12	...	...